（AEN Project 2005）

Wg2:
Validation system

March.2006
e-Learning Consortium Japan

2.2 Validation system (AEN-WG2 activity)

2.2.1 Activity objective

2.2.1.1 Objective

Since the validation system of ADL is large burden to the content supply side, “SCORM assessor qualification system” in lieu of it was established to operate. This activity performs development to each AEN country and propagation and promotion in Japan. In order to effectively propagate and promote, the surveillance of e-Learning propagation status in each AEN country, activity status of assessor system, etc. in Japan is to perform. Furthermore, the study for corresponding to SCORM 2004 which is a latest standard is to perform.

(1) Support of each country development of AEN of SCORM assessor system
(2) Questionnaire surveillance of validation system, etc.
(3) Cooperation and information exchange with each AEN country

2.2.1.2 Target outcomes

(1) Each country development of AEN of SCORM assessor system by training content development, supply, etc.
(2) Surveillance of propagation status of SCORM standard, validation system, etc. in each AEN country and Japan
(3) Information exchange regarding validation, etc. by holding of International Conference

2.2.2 Activity outcomes

2.2.2.1 Implementation system

Table 2-12 Implementation system

		Name	Enterprise, institute and university name
Chairman		Shuji Miyazawa	Learning Architecture Institute
Domestic member		Takeshi Kumazawa	Human Science
		Ryoko Masujima	Fujitsu Learning Media
		Naoki Ikeba	Broseeds
		Teruhiko Kume	NEC Learning
Overseas member	China	Dr. Shenquan YU	Beijing Normal University
	Indonesia	Mr. Binsar Siagian	Technical Education Development Center, Bandung
	Korea	Mr. ChoonWon Park	AlexIT Cp.,Ltd
	Malaysia	Mr. Muhammad Hasan	Multimedia University
	Myanmar	Dr. Aye Thanda (Ms.)	UCSM
	Philippine	Dr. Benito Teehankee	Philippine eLearning Society
	Singapore	Mr. Daniel Tan	Nanyang Technological University
	Thailand	Mr. Wasin Sinthupinyo	NECTEC
	Viet Nam	DR. Nguyen Ngoc Binh	Library and Information Network Center (LINC)

		Mr. Tin Nguyen Ba	New Century Soft Company
Secretariat		Toshio Munemoto	e-Learning consortium, Japan
		Toshiyuki Kobayashi	e-arning consortium, Japan

2.2.2.2 Schedule

Table 2-12 Schedule

Work item	April	May	June	July	August	September	October	November	December	January	February	March
・Planning	→	→	▶									
・Questionnaire surveillance				→	→	→	→	▶				
・Development support to each AEN country						→	→	→	→	→	→	▶
・Fullness of system				→	→	→	→	→	→	▶		
・Information exchange with each AEN country									▲			
・Summery											→	▶

2.2.2.3 Committee activity and others

(1) Domestic committee activity

Table 2-14 Domestic committee activity

Conference name	Date held	Major agenda
First routine conference	Jul 27, '05	・Planning and review of activity program
Second routine conference	Aug 26, '05	・Study of SCORM 2004 orientation of assessor training textbook ・Study of good content case to be reference for assessor
Third routine conference	Sep 21, '05	・Development study of SCORM 2004 compatible assessor training content ・Research of Carnegie Mellon University “Content development practical guide”
Fourth routine conference	Oct 5, '05	・Draft design review of SCORM 2004 compatible assessor training content specification ・Development study of SCORM compatible sample content ・Agenda review of International Conference
Fifth routine conference	Feb 2, '06	・Review of SCORM 2004 compatible assessor training content ・Review of SCORM compatible sample content ・Activity summery

(2) International activity

The International Conference was held in Tokyo in December 14, 2005.

2.2.3 Domestic status regarding SCORM assessor system

2.2.3.1 Utilization status of system and surveillance of effect

(1) Statuses of SCORM assessor qualification acquisition and content validation

The operation of SCORM assessor system (hereinafter referred to as “Assessor system”) was started from July 2004, and it’s been approximately 1 and half year as of February 2006. The assessor qualifiers and contents acquired during this period are as shown in Table 2-15.

Table 2-15 Acquisition results of SCORM Assessor qualification, etc.

		2004	2005	Total
Assessor qualifier	Number of person	14	36	50
	Number of enterprise	—	—	35
Validated content	Number of content	13	20	33
	Number of company	—	—	7
Validated LMS	Number of LMS product	—	—	19

(2) Appropriateness of number of assessor qualifiers

The number of assessors per 1 company is within 1 – 4, in which is average 1.5 assessors/company, and are nearly close to originally planned number. The breakdown of 35 assessor holding companies is as follows: eLC member enterprises are 23, and non-member enterprises: 12. In spite the operation startup period was short, it was confirmed that the assessor system had been widely recognized by enterprises other than eLC member enterprises.

Currently, of eLC member enterprises (about 100 companies), the enterprises who are developing the content is about 65, and as shown above, approximately 1/3 of enterprises has assessors. In near future, if most of enterprises who are involving content development beside eLC member has assessors, it can be assumed that 150 assessor qualifiers (100 companies) of triple of present number will be fostered, and the foundation from the content will be maintained for e-Learning propagation. In order to certainly achieve this target, further public activity for pursuit and system of effectiveness and efficacy of the assessor system is not only e-Learning vendor enterprises but also in e-Learning users should be continuously performed.

(3) Content validation status

As shown in Table 2-15, the validated contents are 33 in total up to date. If this is compared with about 2000 contents already registered in the eLC product retrieval site, it is only about 2%. In order to clarify the cause, we performed hearing to qualified assessors, and the following reasons were given:

- Merit to acquire the content validation is small,
- Content distribution volume is small (A small amount of general purpose content can be sold), and
- Content other than own development is mechanism that can not apply validation.

Especially, the opinions that content other than own development cannot apply validation are the one that cannot apply the validation to the content in the case bail development is performed, and it is the item required to review the system.

On the other hand, improvement to system matched with assessor needs, etc. and information supply service, etc. is to be performed, and it is necessary to promote so as to increase the validated contents.

(4) Interoperability quality status of validated products (LMS and contents)

Concerning LMS and content products passed testing by product validation criteria and SCORM compatibility inspection tool, eLC (e-Learning Consortium, Japan) has validated as the products compatible with the SCORM standard and without problem of interoperability. However, these validated products are not necessarily confirmed by actually using the products every each validation regarding that interoperability problem does not exist between validated products. Then, of the LMS products (19) and content products (33) validated up to date, the validation experiment of 10 LMS products and 5 content products was personally performed in order to check the existence of interoperability problem between products. Experiment participated product list is shown in Table 2-18.

The results are as follows:

- The interoperability between validated LMS products and validated content products was performed, and no problem occurred on operation.
- Concerning the compatible level specified in SCORM standard, there was case that content product was higher than LMS product, and combination experiment of concerned products was not performed (This is problem of SCORM standard, and compatible level every each product has been expressly stated at product validation.).

From the above, eLC validated products were demonstrated that interoperability problems did not almost exist (Since all validated products were not checked, it is not 100%).

From experiences up to date, it was found that the interoperability problems were caused by relating to the SCORM standard and by other problems not related to the SCORM problems. In order to improve the interoperability, eLC established the conditions that the product validation had to correspond to problem of out-of-SCORM standard.

As the results, the interoperability quality of the validated products (validation system) as described above has been achieved.

These out-of-standard conditions have been summarized as “Application technology of SCORM interoperability improvement by case study” concerning the interoperability problems found by the questionnaire surveillance that has been periodically and concretely performing to the concerned eLC member enterprises for releasing. The number of problems that were found by the questionnaire surveillance and were stated in the above documents up to date, is 34 in total. Table 2-17 shows such major problems.

Table 2-16a　LMS product name of interoperability experiment participation of validated products

	Product name	Company name
1	HIPLUS on Web	Hitachi electronics Services
2	Cultiiva II	NEC
3	CultiivAENterprise Powered by Sum Total	NEC
4	AcademicWare WBT	Compaq
5	Net Tutor □	NRI Learning Network
6	ｅARTH-LMS	Wilson Learning Worldwide
7	MSTｅLMS	Lecwell
8	Challenge Learning System	Empty
9	Let’s learning	Matsushita electric Industry
10	Internet Navigware Server Enterprise Edition	Fujitsu

Note) Listed in sequential order

Table 2-16b　Content product name of interoperability experiment participation of validated products

	Product name	Company name
1	Personal communication	Fujitsu Learning Media
2	Basic ecology short lecture	Fujitsu Learning Media
3	“Business manner” course	Sangyo Noritsu University
4	Personal information protection	NRI Learning Network
5	4 selective examination question sample version　By interaction maker	SATT

Table 2-17 Described items of "Application technology for SCROM interoperability by case study"

	Classification	Item
1	Manifest file	Difference of manifest file character code
		Distinction of capital and small characters of SCO URL
		Absolute and relative buses of SCO URL
2	SCO startup	Retrieval order of FindAPI
3	API function	There is no argument of LMSInitialize
		Retrun value of LMSInitialize is Boolean
		Repetition of LMSInitialize and LMSFinish
4	Data model	Incorrect vocabuary of lesson_status
		LMS that has not installed lesson_status operation
		LMS learning time is measured with lesson_status value
		Presmise condition and lesson_status value
		cmi.core.score.raw value is out of scope
		LMS opearates when masteryscore is 0
		LMS operates when masteryscore is empty
		Handling of option data element not installed
5	Others	It is SCO complied LMS, but material cannot be transplanted

2.2.3.2 Questionnaire surveillance regarding validation system

The number of eLC membercompanies replied and the number of non-eLC member companies replied were 30 and 10 respectively.

These results are shown as follows:

Recognitions of the assessor system of eLC member enterprises and the SCORM content validation system are extremely high, and has been improved, compared with the last year. In the surveillance regarding the effectiveness, both assessor system and SCORM content validation system remain about 55% - 60%, however negative opinion of "Not effective" has been drastically decreasing, compared with the last year. While, about 30% of the eLC non member enterprises has replied "Does not know the system", and further propagation and public activity for persons other than eLC members are required.

(1) SCORM assessor qualification system

(a) Recognition level

The eLC members are 93% for "Know" and 0% for "Does not know", and it can be said that the recognition level of system itself is extremely high. Furthermore, the recognition level has been improved, compared with the last year. While, the recognition level of eLC non-members are 60% low, compared with the members, and further publication and propagation are therefore required.

Table 2-18　Recognition of SCORM assessor qualification system

Question content	Replied item	This year (ｅLC)	Last year (ｅLC)	ｅLC nonmember
Recognition of SCORM assessor	Known	93%	82%	60%
	Does not know	0%	8%	30%
	Not replied	7%	10%	10%

(b) Effectiveness

The effectiveness of SCORM assessor qualification system was asked for each content development company (20 eLC member companies)/9 non-member companies). “Think to be effective” is 65% which occupies more than half of all members. Furthermore, this has improved more than 60% than evaluation in last year. However, no-replied is nearly 20%, and it is therefore necessary to emphasize SCORM assessor propagation and recognition.

Table 2-19　Effectiveness of SCORM assessor qualification system

Question content	Replied item	This year (eLC)	Last year (eLC)
Effectiveness	Think	65%	60%
	Does not think	0%	18%
	Not known	10%	—
	Not replied	25%	22%

(c) Utilization status

The number of SCORM assessor qualification acquired up to date is 50, and 34 qualifiers have been increased, compared with the last year, resulting in doubled increase. As the result of surveillance, 70% of 20 eLC member companies has qualifiers, and assessor propagation is successfully advancing. While, “Not-replied” among eLC non-members is high, and it regrets to say that recognition of assessor is still low.

Table 2-20　Utilization status of SCORM assessor system

Question content	Replied item	This year (eLC)	Last year (eLC)
Assessor qualifier	Yes	70%	26%
Upbringing schedule of assessor qualifier	Yes	5%	30%
	No	25%	50%
	Not replied	0%	20%

(2) SCORM compatible content validation system

(a) Recognition

The recognition level of content validation system was extremely 93% high, and the number of company “Does not know” was 0. Furthermore, in eLC non-members, recognition level of this system is 70% high, and it indicates high needs and interest to the content quality.

Table 2-21 Recognition level of content validation system

Question item	Replied item	This year (eLC)	Last year (eLC)	eLC non-member
Recognition	Known	93%	90%	70%
	Does not know	0%	2%	20%
	Not replied	6%	8%	10%

(b) Effectiveness

"Thinks to be effectiveness" of the content validation system became 55%. The choices of "Hard to judge" in the last year was not provided, however 40% has shifted to the item this year, and the figure of "Thinks to be effectiveness" has slightly decreased, compared with the last year. However, if "Does not think" is compared, this year has drastically decreased the figure, and it can be said that the effectiveness has been recognizing from the figure that "Does not think" among eLC non-members is 0".

Table 2-22 Effectiveness of content validation system

Question content	Replied item	This year (eLC)	Last year (eLC)	eLC non-member
Effectiveness	Think	55%	60%	40%
	Does not think	5%	26%	0%
	Hard to judge	40%	—	20%
	Not known	0%	—	
	Not replied	—	14%	40%

(c) Utilization status

When the content breakdown of development schedule for 1 year in the future (Vendors not described in number of development products are exempted from the subject) is observed, the distribution purpose contents are 9/company which has drastically decreased from 20/company in the last year. As for this cause, the current major flow of this original content business has been shifting to custom content by market change, and it therefore is assumed that there is judgment that even content is developed for distribution purpose, recovery of invested cost would be difficult.

Furthermore, the SCORM compatible ratio of the distribution purpose contents is still average 41% and does not reach 50%. The number of companies who will be applying the SCORM validation of content is 5 which are only half. It is necessary to pursuit understanding, advantage, etc, to the standardization.

Table 2-23 Utilization status

Question content	Item	This year	Last year
Development schedule (for this 1 year)	Distribution purpose	9	20
	Non-distribution purpose	24	29
	SCORM compatibility	41%	50%
	SCORM non-compatibility	59%	40%
	Applies validation	5	5
	Does not apply validation	5	5

(d) Issue and request

The reasons that do not apply the content validation are as: ① no advantage after validation (3 companies); ② does not know how to apply validation (1 company); ③ cost is issue (3 companies), and in the current system that validation for the custom content can not be applied, it is considered that a large advantage cannot be felt. Therefore, in the bailed development content, it is seemed to be necessary to immediately perform modification so as that validation can be applied if a certain condition is cleared. If such point is improved, even vendors who does not bring up assessor qualifiers due to the reason of "No advantage", it is considered to relate to by strongly appealing the advantage of qualifier upbringing.

2.2.4 Developing assessor system to each AEN country

2.2.4.1 Review of status and development method of each country

(1) Expectation to SCORM assessor system and each country status

Concerning the SCORM assessor system for interoperability foundation introduced and suggested by Japan in the last year, AEN participating countries are highly expecting this system. It is considered to be the reasons of that this is not only maintenance of the interoperability foundation but an efficient aspect is also economically evaluated as solution for human upbringing of e-Learning professional who is assessor.

While, as the result studied by this working group, in order to establish the interoperability foundation such as assessor system, it was cleared during debate that statuses such as IT infrastructure and education of internet, etc. which each country suffers and market scale and tendency of e-Learning would extremely affect.

Due to that, Japan suggested a maturity model regarding the interoperability foundation of e-Learning, based upon historical particulars of progress of Japanese interoperability foundation. Table 2-24 shows the maturity model.

Here, the process that the interoperability foundation is being maintained by classifying into 5 phases is expressed by referring to the maturity model of management being generally used. Especially, it is assumed that existence of organization and system supporting the foundation is extremely affecting.

During the conference in the last year, we for asked opinions to each country representative regarding the maturity in each country, and it was found that Japan, Korea and Singapore were in position of phase 4, and Malaysia, Thailand, Viet Nam and Indonesia were in position of phase 2 – 3.

The utilization method of assessor system differs depending upon the maturity phase of each country. For each country introduction of the assessor system, it is considered to be important to review depending upon the maturity phase of each country and each country needs.

Table 2-24　Maturity model of interoperability foundation

Phase	Stage	Description
1	Natural occurrence stage	Concerning interoperability of e-Learning, individual personal is tackling with depending on individual necessity
2	Controlled stage	Concerning interoperability of e-Learning, LMS vendors and content vendors discuss the interoperability being corresponded to as organization, government and civil organization and body have been established to control
3	Defined stage	Concerning interoperability of e-Learning, validation of LMS product and technology for corresponding standard establishment (SCORM, etc.) and interoperability is performed
4	Quantitatively controlled stage	As to interoperability of e-Learning, any troubles regarding interoperability that the compatibility validation concerning the content being integrally controlled including LMS and content is organizationally performed, occurred, solution procedure has been clearly stated.
5	Optimized stage	As for interoperability of e-Learning, the system that users can safely purchase and use the products, has been maintained, and continuously improved.

(2) Introduction study of assessor system compatible with maturity status of each country

In order to perform the introduction study of assessor system compatible with the maturity status and needs, each country needs to acquire wider information related to the assessor system. Fortunately, wider information regarding the assessor system could be included in the SCORM training contents developed in the last year. Table 2-25 shows the major description items of SCORM assessor training contents.

Table 2-25　Major description items of SCORM assessor training content

Described item	Major description
SCORM assessor overview	・Advantage of qualification acquisition ・Necessity and role of assessor
SCORM assessor system requirement	・About qualification validation system ・SCORM assessor work
SCORM 1.2 assessor overview	・LMM and content standard overview ・Standard compatible requirement
SCORM content creation method	・SCORM content design point ・SCORM content creation exercise
SCORM compatibility inspection	・Compatibility inspection tool operation exercise
Related document	・Interoperability problem know-how

In order to introduce the SCORM assessor system into each country, it is an important that each country understands the SCORM assessor system and arranges the environment that SCORM engineers is educated.

Since SCORM assessor training contents created by both Japanese and English languages, and performed explanation by voice, the SCORM assessor knowledge can be learned, and engineers can be brought up if e-Learning can be supplied to each country.

As the result reviewed by working group, the information supply method in order to develop the assessor system in each country was determined to proceed with the following policies:

- e-Learning site is to build, and the SCORM assessor training content is to supply each AEN country as e-Learning service,
- Countries where infrastructure maintenance is insufficient, is assumed, and it shall be also supplied as a text other than content, and
- The SCORM 1.2 and 2004 standard compatible sample contents other than the SCORM assessor training content shall be inserted into the above-mentioned e-Learning site, and the SCORM technology shall be arranged to learn.

In countries where e-Learning indicated in the maturity model, is progressing, it is assumed to concretely study the SCORM assessor system introduction, and concrete technique was determined to be future issue.

2.2.4.2 Questionnaire surveillance result to each AEN country

(1) e-Learning propagation status in each country

The e-Learning propagation ratios in each country surveyed this time were mainly classified from the market scale data as follows: advanced group; semi-advanced group; and developing group. This is shown in Table 2-26.

In the e-Learning propagation status in each AEN country, strong co-relation with internet propagation ratio was observed. In the countries with more than 30% of internet propagation ratio, the e-Learning propagation ratios was also high, and the reply that 10 – 30% were used by domestic enterprises and universities, was obtained. Several ten content vendors and LMS vendors exist in these countries, and business activity is performed.

Table 2-26 e-Learning propagation status and internet propagation ratio in each AEN country

	Advanced group	Semi-advanced group	Developing group
Internet propagation ratio (%)	More than 30%	10 - 30%	Less than 10%
e-Learning propagation ratio (%) (proportion to number of enterprise and body	More than 30%	10 - 30%	Less than 10%
Market scale (¥100 million yen)	More than 10 billion	Less than 10 billion	Less than 1 billion
Number of LMS vendor (company)	Several ten companies	Several ten companies	Several companies
Content vendor (company)	Several 100 to several 10 companies	Several ten companies	Several companies
Number of distributed product	Many	Many	Small
e-Learning propagation body	Yes	No	No
Propagation stage of e-Learning and SCORM standard (assumption)	e-Learning is propagating, and interoperability problem is also occurring/Content distribution is advancing/ Many LMS and content products are selling, and products employing SCORM standard are also many	e-Learning is propagating, and interoperability problem is also occurring/Many LMS and content products are selling, and Products employing SCORM standard are also many	e-Learning is not almost propagating, and interoperability problem does not occur/Content distribution is not almost performed/LMS and content products are not almost selling.

(2) Recognition to standardization in each country

The concept to standardization of e-Learning surveyed this time was compared with the concept of domestic enterprise. It will be as shown in Table 2-27. For the recognition to penetration ratio and importance of the standardization, figures in each AEN country are much higher than Japan. Regarding the answer against the question of “Is standardization restricted to product?”, “No” is 75% in each AEN country, while Japanese member answers are: “Hard to judge” is 45%.

Furthermore, concerning the question of “Is information disclosure for standardization promotion progressing?”, 58% is “Yes” in each AEN country, while 51% is “No” in Japan. This may be due to language barrier, however we cannot deny that propulsion force of standardization will be insufficient.

Table 2-27 Recognition to standardization in each country

	AEN each country member				**Domestic business responsible person /Development manager**			
Questioned item to standardization	Yes	No	Hard to judge	Not known	Yes	No	Hard to judge	Not known
Do you think standardization is important for your business development?	**92%**	0%	0%	8%	**60%**	14%	22%	2%
Do you think standardization has been penetrating into your country?	**92%**	8%	0%	0%	**34%**	**34%**	26%	3%
Do you think standardization becomes important for e-Learning users in future ?	**75%**	17%	0%	8%	**58%**	8%	28%	3%
Do you think standardization (SCORM) is sufficient specification for education service to be supplied?	25%	**50%**	17%	8%	17%	**40%**	28%	12%
Do you think standardization is mandatory for content distribution and reuse?	**83%**	8%	0%	8%	**69%**	12%	15%	0%
Do you think standardization supports content development cost reduction?	**42%**	25%	17%	17%	**38%**	23%	31%	5%
Do you think standardization extends content product choice range of client?	**75%**	0%	17%	8%	**65%**	11%	22%	0%
Do you think standardization restricts product function and is not desirable?	8%	**75%**	8%	8%	11%	40%	**45%**	2%
Is current information is sufficient in order to realize standardization?	**58%**	33%	0%	8%	28%	**51%**	12%	6%

(3) Recognition to validation system in each country

Country with high propagation ratio of e-Learning uses many ADL test suite, and movement to aggressively improve interoperability is observed. Furthermore, many countries are evaluating the validation system such as Japanese SCORM assessor qualification system. This will be because compatibility to this validation is recognized to be effective before interoperability is maintained. As the reason of less utilization of the ADL validation system, there were many opinions of “Cost is expensive” and “System, etc. are not clear”.

Regarding the question of “Does your country have unique system to validate that LMS/content are compatible the SCORM standard”, Korea, Singapore, Thailand and Viet Nam have answered “Yes”. As to Korea and Singapore, it is considered to be natural from their e-Learning progress, however it was unexpected that Thailand and Viet Nam are applying such system. In addition to the above question, the following 2 more questions were added. The replies obtained from 4 countries are shown as follows:

The question was “How many LMS has been validated by your country system?”. The answers were: 5 products in Korea, 10 products in Singapore, 1 product in Thailand and 2 products in Viet Nam, which are less quantity compared with 19 products (as of end of February 2006) in Japan. Furthermore, the question was “How many content has been validated by your country system?”. The answers were: Korea is no reply, 6 products in Singapore, Thailand is not known and 2 products in Viet Nam while Japan is 32 products, and it therefore can be said that validation in Japan is much advanced.

In the next, concerning the question of “Do you think SCORM validation system of Japanese content (indirect validation system by assessor) is effective?”, “Yes” was 33%, “No” was 0%, “Hard to judge” was 53% and “Not known” was 13%. Furthermore, concerning more specific question of “Are you willing to employ the SCORM validation system of Japanese content?”, “Yes” was only 1 country which clearly stated their will, and all the rest was “Not known” or not replied.

Anyhow, image and atmosphere of the validation system will be future technology, and leading country of Japan will need to make more effort to settle the system.

2.2.4.3 Supply of assessor training content by content presentation site architecture

In order to aim at understanding the SCORM assessor system in each AEN country, the site called “Content presentation site” to learn the SCORM assessor training system by e-Learning, was architected.

Since this site is e-Learning site, various contents other than assessor training content can be loaded to learn. Furthermore, LMS corresponding to both SCORM 1.2 and 2004 standards was employed so that both contents of SCORM 1.2 and 2004 standards could be loaded. This site will be supplying to each AEN country and Japan for a while as APS service with free of charge.

Constitution image of this site is shown in Figure 2-6.

This site is linked from the AEN portal site, and consists of English version site (top screen) for each AEN country and Japanese version sites.

The contents as shown in Table 2-28 will be loading as the content that can be learned by this site.

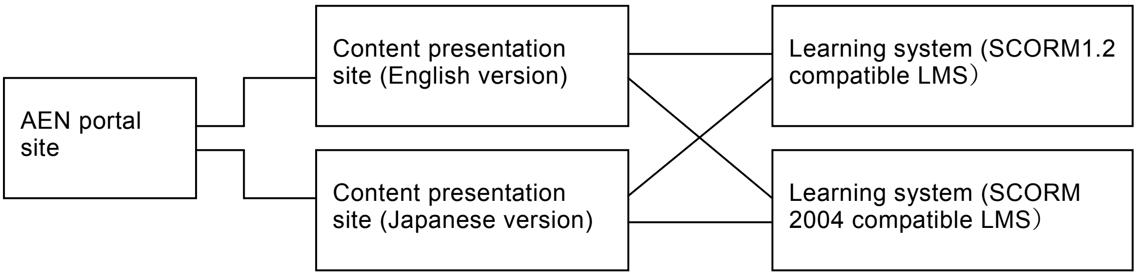

AEN portal site
Content presentation site (English version)
Content presentation site (Japanese version)
Learning system (SCORM1.2 compatible LMS）
Learning system (SCORM 2004 compatible LMS）

Figure 2-6 Architecture view of content presentation site

Table 2-28 Content list that will be loading on content presentation site

	Content name	Content description
1	SCORM assessor training content	Learning of knowledge required for SCORM assessor qualification acquisition
2	SCORM 2004 content creation know-how (Boy's baseball edition)	Learning of SCORM 2004 standard compatible content creation knowledge used case of boy's baseball
3	SCORM 2004 content creation know-how (skill check edition of information processing engineer examination)	Learning of SCORM 2004 standard compatible content creation knowledge used case of information processing engineer examination
4	SCORM 2004 content creation know-how skill up edition of information processing engineer examination)	Learning of SCORM 2004 standard compatible content creation knowledge used case of information processing engineer examination
5	SCORM 1.2 content creation know-how	Learning of content creation knowledge of SCORM standard compatible high study effect

Note) Item Nos. 3 – 5 load only Japanese version.

2.2.5 Expansion of SCORM assessor system and Engineer level up

2.2.5.1 Corresponding to SCORM 2004 standard

The SCORM assessor being operated is subject to SCORM 1.2, and the assessor training content is also subject to SCORM 1.2. Therefore, together with surveillance of SCORM 2004 which a latest standard, creation of the assessor training content corresponding to 2004 was studied, and prototype version was developed.

(1) Objective

① Development of prototype version of SCORM 2004 assessor training content

The training content related to SCORM 2004 was built-in as black box SCO, and it is to design so that SCO can be easily changed and SCORM 2004 orientation can be done.

② Utilization as SCORM 2004 training material

It shall be the content built in feature of SCORM 2004, and shall be able to use as the training material of SCORM 2004 content development. Especially, simple sequence shall be supported.

(2) Creation (preparation) policy

① The SCORM 1.2 compatible training content is the education content for upbringing of SCORM assessor, and explains the creation method of SCORM 1.2 compatible content. This content itself is the SCORM 1.2 compatible content. Using this content, the content that is operated with SCORM 2004 LMS is to be created.

② All sections of the existing contents are to be modified for the SCORM 2004 compatible contents, however the description is not changed. UI and screen layout is to use existing content.

③ By assuming addition of sections in future, sections of black boxes are to be provided.

④ Using the pre-examination, insufficient skill of learner's level has to be judged. Constitution (sequencing) to let him learn only category compatible to insufficient skill is to be provided.

⑤ After completion of learning, the post-examination (random examination)) is to perform. Correct answer ratio is to output based on the post-examination result. Further, part required for learning shall be displayed.

⑥ LMS navigation shall be operated from the content side. With movement button to next SCO at LMS side not displayed, the function of "Move to next SCO from the content side" is to be entered.

(3) Effect of SCORM 2004 material

① Possessed skill of learner is to be investigated with the pre-examination, and let him learn only insufficient skill. Efficiency of learning and personalization can be contrived.

② Understanding level of learner to the learning target is to be investigated with the pre-examination. In the case of insufficient understanding, let him re-learn, and let him understand perfectly.

(4) Material constitution

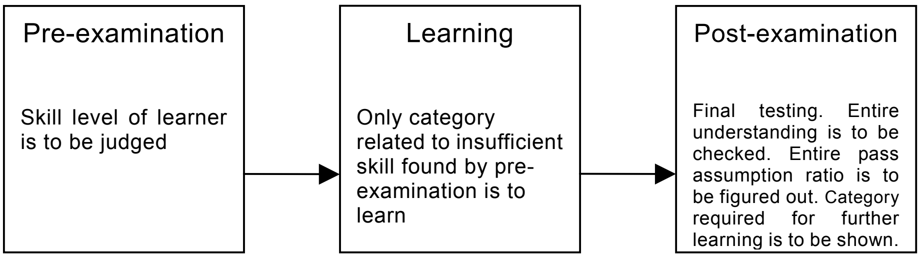

Pre-examination
Skill level of learner is to be judged
Learning
Only category related to insufficient skill found by pre-examination is to learn
Post-examination
Final testing. Entire understanding is to be checked. Entire pass assumption ratio is to be figured out. Category required for further learning is to be shown.

Figure 2-7 Constitution of SCORM 2004 assessor training content

2.2.5.2 Improvement of content creation technology

The role of SCORM assessor is to develop the content with interoperability complied with the SCORM standard, however in addition to that, it is an important that learning efficiency and learning understanding level are high as well as attractive content can be developed for the learner. Therefore, this working group reviewed regarding the SCORM standard compatibility and the content development with high learning effect. As the result of review, it was judged to be effective that general purpose material sample (content case) with high learning effect by learning purpose shall be created and shall be disclosed to the assessor qualifiers and the content development engineers, and 7 types of content vase were created.

(1) Objective

・To comply with the SCORM standard, and to create general purpose content case with high learning effect, and

・To improve engineering level of content development engineer of assessor, etc. by disclosure of the content case created.

(2) Content case created

7 types of content case were created this time. The type and feature are shown in Table 2-29. This case will be inserting into the “Content presentation site”.

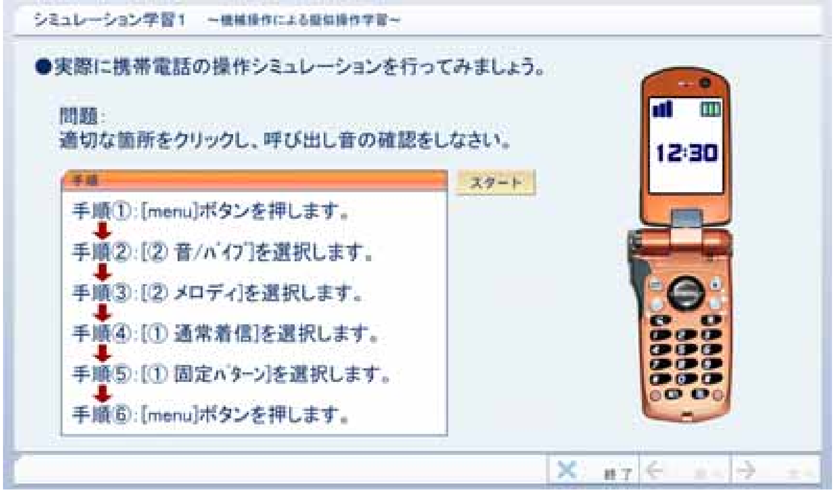
Table 2-29 Content case with high learning effect

No.	Content case name	Feature
1	Explanation material by text	Record of learning memo, learning support of detailed description and partial printing of screen
2	Explanation material by animation	Learning by lecture style with video and narration synchronized
3	Examination material	Question of text style selection and automatic scoring and point out of weak item
4	Role play type material	Knowledge application learning of motivation continuous type by communicating system and learner
5	Simulation type material (false operation)	False operation learning of device, etc. that can be experienced without use of actual device
6	Simulation type material (software operation)	Repeated learning of computer screen operation
7	Simulation type material (data input check)	Experience learning that one learning case is repeated and deeply understands through versatile verification

(3) Introduction of content case

The simulation type material (false operation) is to be introduced. This case is the false operation material that can be experienced without providing actual device, and the major features are as follows:

Operational explanation of equipment by paper is generally to hardly understand the flow of operation due to still image, however since e-Learning is easy to understand actual device image, and the operation procedure can be actually performed by learner himself, and the learning effect is remarkably improved. This also has advantage that expensive equipment is not provided for learner. As utilization examples, there are maintenance learning material such as IT device, etc. and training material, etc. before actual device operation such as special vehicle, etc. The following shows the screen example:


シミュレーション学習1　〜機械操作による擬似操作学習〜

●実際に携帯電話の操作シミュレーションを行ってみましょう。

問題：
適切な箇所をクリックし、呼び出し音の確認をしなさい。

手順

手順①：[menu]ボタンを押します。
手順②：[② 音/バイブ]を選択します。
手順③：[② メロディ]を選択します。
手順④：[① 通常着信]を選択します。
手順⑤：[① 固定パターン]を選択します。
手順⑥：[menu]ボタンを押します。

Figure 2-8　Content case with high learning effect

2.2.6 Information exchange with each AEN country

2.2.6.1 AEN-WG2 International Conference

(1) Conference overview

The AEN-WG2 International Conference was held in Tokyo in December 14, 2005. 9 participants form 9 overseas countries and 7 participants from Japan were attended, and presentation of each country status and opinion exchange regarding validation system, etc. were performed.

(2) Participants

Table 2-30 International conference participant list

Country name	**Participant name**
China	Mr. Yu
Indonesia	Mr. Siangian
Korea	Mr. Park
Malaysia	Mr. Hasan
Myanmar	Dr. Thanda
Philippine	Dr. teehankee
Singapore	Mr. Tan
Thailand	Mr. Sinthupinyo
Viet Num	Dr. Nguyen
Japan	Miyazawa chairman, Ikebe, Kumazawa, Masujima
Secretariat	Munemoto, Kobayashi, Yoshino

(3) Report description of each country

(a) Japan

- Presentation of overview of SCORM assessor qualification system, training content supply, etc.

(b) Thailand

- The product acquired ADL validation by the site of “NSRDA Online Learning Project” is opening, and
- Two conferences for SCORM promotion were held this year.

(c) Myanmar

- Presentation of tacking with such as IT multimedia school, e-Learning center, etc.

(d) Korea

- Joint activity of ADL and KIEC（Korea Institute for Electronic Commerce）is aggressively implementing,

- ADL test center was opened,
- Of approximately 1000 content vendors in Korea, 10% of them can create the SCORM compatible contents,
- The government is making them accelerating standardization by SCORM and propagation nationwide, and is supporting the content vendors. In future, they will build the test center of global level focused to SCORM.
- Korea is developing nationwide scale service of government subjectivity called Cyber Home Leaning System. 15 local institutes developed the SCORM compatible LMS and content respectively, and the metadata was summarized by KERIS（Korean Education & Research Information Service）,and were distributed nationwide. The content development scale is 50 courses, and １ course consists of 80 learning objects.
- The e-Learning support budget of government was $6 million in 2005, and will be increasing in next year. The government is making best effort for e-Learning promotion and foundation construction.

(e) Malaysia

- Utilization of e-Learning called “Smart School project” is progressing at nationwide schools. e-Learning is corresponding to the SCORM 1.2 standard.
- We would like Japan to advise regarding the assessor system to the content development companies. We also would like to think of how the SCORM assessor system can be established by our country.

(4) Opinion exchange

(a) Regarding SCORM assessor system

- The SCORM assessor qualification system is the system for interoperability, and we do not depend on it since it does not measure the content quality. It is better to judge all content qualities and SCORM compatibility by public institute such as the e-Learning center. (Malaysia)
- Is this system applied to only Japanese product? (Malaysia)
  → We have experienced validation of Korean product. (Japan)
- eLc is currently validating assessor, however can this be validated in each country? (Singapore)
  → We are developing based upon the present system in each country, and would like to validate by each country. (Japan)

(b) Regarding SCORM 2004 standard

- In Japan, how has shift to SCORM 2004 action been taken? In Malaysia, there is resistance against SCORM 1.2→SCORM 2004. We would like you to supply SCORM 2004 problems and sample contents on the site. (Malaysia)

→ We will be supplying the SCORM 2004 guide and sample contents by activity in this year.

- In SCORM 2004, the instruction design and sequencing are most importance, and the guide described these in details is required. (Korea)
- The content creation guide that uses SCORM 2004 feature and sample content are currently preparing, and will be supplying to each country in March 2006.

(c) Regarding AEN activity

- We obtained a large outcome by participating the AEN activity. If holding of International conference that each country gathered in the past is difficult, we would like to exchange opinions using mail, etc. (Viet Nam)

(d) Others

- Currently, content development company is developing content by unique standard, and we are afraid of flooding of standards. From government viewpoint, we wish SCORM to become assistance. (Indonesia)

(5) Summery

Active opinion and information exchange regarding interoperability of the content and propagation of assessor were performed, and behavior of earnest tackling of each country was observed. Especially, an interesting of participating countries to Korean activities were high, and it was felt that such information exchange opportunity was necessary.

Many participating countries are facing with various problems when they introduce new standard and new system, and advice should be done by using Japanese experiences, and at the same time, it is considered that supporting an efficient information share between participating countries would be future issue.

(6) Confirmation of WG2 summarization

Concerning the following summarization, all participated members, confirmed and agreed.

“The interoperability problems are extremely important for e-Learning propagation. Especially, the information exchange of interoperability from contents is also necessary. The community established through this AEN activities should be continued, and it is necessary to be able to continue the information exchange. The e-Learning initiative will end up by this time, however By reviewing each country status in future, it is an important to continue low cost and high performance activity using mail, web, etc.

2.2.7 Summery of activity outcomes

2.2.7.1 Activity outcomes

(1) AEN development of assessor system by supply of SCORM assessor training contents

The mechanism to supply the SCORM assessor training content to each AEN country was provided as e-Leaning service. Each AEN country became possible to introduce and review the assessor corresponding to e-Learning propagation level and needs of their country.

(2) Operation status and evaluation of SCORM assessor system

Total number of the SCORM assessor acquired qualifiers is 50, is transiting successfully, and it is assumed to be increased by 150 in future.

In order to evaluate the effectiveness of validation system, the interoperability check experiment of the validated products (LMS and content) was performed, and it was found there is no problem on interoperability.

(3) Status of each country and information exchange

Each AEN country is promoting SCORM propagation. Singapore, Viet Nam, Malaysia and others are studying SCORM assessor introduction. Under government instruction, Korea is emphasizing to propagate SCORM technology and e-Learning in cooperation with ADL.

(4) Development of prototype version of SCORM 2004 assessor training content

The prototype version of training content was developed for preparing SCORM 2004 assessor system propagation.

(5) Creation and disclosure of content case for content development technology improvement

7 types of content case with high educational effect that became reference of content creation, were created, and were disclosed at the presentation site.

2.2.7.2 Future issue

(1) Promotion support of AEN development of SCORM assessor system

Each AEN country provided information acquisition technique required for introduction review of SCORM assessor system. In future, installation of consultation window for introduction/review of each country and embodiment is required.

(2) Review and implementation of increase measure of validated content

The validated contents are not increased, compared with the number of content development. Validation system, validation advantage, etc. are re-studied, and increase of the validated contents should be planned.

(3) Continuation of information exchange with each country

The interoperability problem is most important for e-Learning propagation. Especially, the information exchange regarding interoperability from content side is required. This community established through this AEN activity should be continued in order to be able to continue the information exchange. e-Learning initiative by AEN is concluded with this time, however in future, it is necessary to continue low cost and high performance activity using mail, web, etc. by reviewing each country status.